
A New Combination in *Toxicoscordion* (Melanthiaceae) for the Rocky Mountain Region, North America

Jeffrey W. Brasher

Department of Biological Sciences, University of Northern Colorado, Greeley, Colorado 80639, U.S.A. Current address: Rocky Mountain Herbarium, University of Wyoming, Department of Botany, Dept. 3165, 1000 E. University Ave., Laramie, Wyoming 82071-3165, U.S.A. jeff.brasher@sbcglobal.net

ABSTRACT. The new combination *Toxicoscordion venenosum* (S. Watson) Rydberg var. *gramineum* (Rydberg) Brasher (Melanthiaceae) is made to accommodate this taxon in this genus at the rank of variety for the Southern Rocky Mountain Interactive Flora (SRMIF) project. Recent chromosome and DNA sequence data support segregation of *Toxicoscordion* Rydberg from *Zigadenus* Michaux s.l.

Key words: Melanthiaceae, Southern Rocky Mountain Interactive Flora (SRMIF), *Toxicoscordion*, *Zigadenus*.

The need for a new combination in *Toxicoscordion* Rydberg (Melanthiaceae) was discovered in the process of constructing the Southern Rocky Mountain Interactive Flora (SRMIF) (<<http://asstudents.unco.edu/students/lucid/>>) (Brasher & Snow, 2003, onward) and revising the accompanying “Provisional Checklist of Vascular Plants for the Southern Rocky Mountain Interactive Flora,” an earlier version of the Checklist of Vascular Plants of the Southern Rocky Mountain Region (Snow, 2009).

1. ***Toxicoscordion venenosum*** (S. Watson) Rydberg, Bull. Torrey Bot. Club 30: 272. 1903. Basionym: *Zigadenus venenosus* S. Watson, Proc. Amer. Acad. Arts 14: 279. 1879, as *Zygadenus venenosus*. TYPE: U.S.A. Utah: Summit Co., Parley’s Peak, 6000 ft., June 1869, S. Watson 1163 (lectotype, designated by Reveal, 1977: 488, GH not seen).
- 1a. ***Toxicoscordion venenosum*** (S. Watson) Rydberg var. ***venenosum***.
- 1b. ***Toxicoscordion venenosum*** (S. Watson) Rydberg var. ***gramineum*** (Rydberg) Brasher, comb. nov. Basionym: *Zigadenus gramineus* Rydberg, Bull. Torrey Bot. Club 27: 535. 1900, as *Zygadenus gramineus*. *Toxicoscordion gramineum* (Rydberg) Rydberg, Bull. Torrey Bot. Club 30: 272. 1903. *Zigadenus venenosus* S. Watson var. *gramineus* (Rydberg) O. S. Walsh ex M. Peck, Man. Pl. Oregon 1941, nom. inval. *Zigadenus venenosus* S. Watson var. *gramineus*

(Rydberg) O. S. Walsh ex C. L. Hitchcock, Vasc. Pl. Pacific NW 1: 815. 1969. TYPE: U.S.A. Montana: Galletin Co., Spanish Basin, 6500 ft., 28 June 1897, P. A. Rydberg & E. A. Bessey 3848 (holotype, NY online image seen).

Zigadenus intermedius Rydberg, Bull. Torrey Bot. Club 27: 535. 1900. *Toxicoscordion intermedium* (Rydberg) Rydberg, Bull. Torrey Bot. Club 30: 272. 1903. TYPE: U.S.A. Idaho: Nez Perce Co., May 1892, J. H. Sandberg 10564 (holotype, NY online image seen).

Zigadenus acutus Rydberg, Bull. Torrey Bot. Club 27: 536. 1900. *Toxicoscordion acutum* (Rydberg) Rydberg, Bull. Torrey Bot. Club 30: 272. 1903. TYPE: U.S.A. South Dakota: Black Hills, Box Elder Creek, June 1887, W. S. Rusby s.n. (holotype, NY online image seen).

Zigadenus falcatus Rydberg, Bull. Torrey Bot. Club 27: 536. 1900. *Toxicoscordion falcatum* (Rydberg) Rydberg, Bull. Torrey Bot. Club 30: 272. 1903. TYPE: U.S.A. Colorado: Larimer Co., Fort Collins, 5000 ft., 23 May 1893, C. S. Crandall s.n. (holotype, NY online image seen).

Distribution and habitat. Geographic distributions of the two varieties are as follows (USDA, 2009). Both occur in the American states of Utah, Idaho, Oregon, and Washington, and the Canadian provinces of Alberta and British Columbia in North America. Variety *gramineum* additionally extends eastward into the American states of New Mexico, Colorado, Nebraska, Wyoming, Montana, South Dakota, North Dakota, and the Canadian province of Saskatchewan. Variety *venenosum* additionally extends westward into the American states of Nevada and California.

Habitats of the two varieties differ. Variety *gramineum* inhabits inland grasslands and open pine woods from 500 to 1300 m (Schwartz, 2002), whereas variety *venenosum* occurs in coastal areas and well-drained grasslands from 0 to 2500 m.

Discussion. *Toxicoscordion* has been used in Colorado by Weber and Wittmann (1992, 2001) as one segregate genus removed from the broadly circumscribed genus *Zigadenus* Michaux s.l. The splitting of *Zigadenus* s.l. has been supported by chromosome number and DNA sequence data (Zomlefer et al., 2001; Zomlefer & Judd, 2002; Zomlefer, 2003).

It seems best to recognize variety *gramineum* at varietal rank in *Toxicoscordion venenosum* rather than species rank following Reveal (1977), Dorn (2001), and Schwartz (2002). This recognizes the similarity of variety *gramineum* to typical *T. venenosum* over its similarity to other species in the genus. A key to varieties adapted from Schwartz (2002) and Reveal (1977) is given below.

- 1a. Upper stem leaves not sheathing; inflorescences mostly racemose, occasionally paniculate with 1 basal branch; outer tepals with claw 0.5–1 mm long *Toxicoscordion venenosum* var. *venenosum*
- 1b. Upper stem leaves, except for the bracts of the inflorescence, all sheathing; inflorescences mostly paniculate with 1 or 2 basal branches, occasionally racemose; outer tepals not clawed or with a claw < 0.5 mm long
 *Toxicoscordion venenosum* var. *gramineum*

According to the *International Code of Botanical Nomenclature* (Greuter et al., 2000), articles 32.1, 33.2, and 41.5, the combination *Zigadenus venenosus* S. Watson var. *gramineus* (Rydberg) O. S. Walsh ex M. Peck (1941) was not validly published, lacking reference to the publication of the basionym, but was later validated in Hitchcock (1969).

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